

ABSTRACT

A system and method for controlling the temperature and humidity level of a controlled space. The system includes a total energy recovery wheel and a dehumidification wheel in conjunction with a cooler to control the temperature and humidity of air supplied to a controlled space. In a method of controlling temperature and humidity of a controlled space, supply air is cooled and dehumidified by passing it through a rotating total energy recovery wheel. The total energy recovery wheel is cooled and dehumidified by passing exhaust air through it. The supply air is further cooled and dehumidified by passing it through a cooler. The supply air is warmed and further dehumidified by passing it through a rotating dehumidification wheel. The dehumidification wheel is warmed and dehumidified by passing exhaust air through it. During the heating mode, the system functions as an extremely effective total energy recovery device by operating the two wheels in series.

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